Tolling Forum 2023

General Tolling Requirements (GTR)

August 17, 2023

Agenda

- Introductions
  - Transportation Development Director
  - District Design Engineer
  - GTR Team
  - FTBA & ACEC
- GTR Overview
- Updates for 2023
- Feedback

Alison Stettner, AICP
Director of Transportation Development

Andra Diggs II, PE
District Design Engineer

James E Beverly
District Tolls Design Administrator
P: 407.264.3646
JamesE.Beverly@dot.state.fl.us

Chelsea Scheid
Toll Facilities Eng
P: 407.264.3418
Chelsea.Scheid@dot.state.fl.us

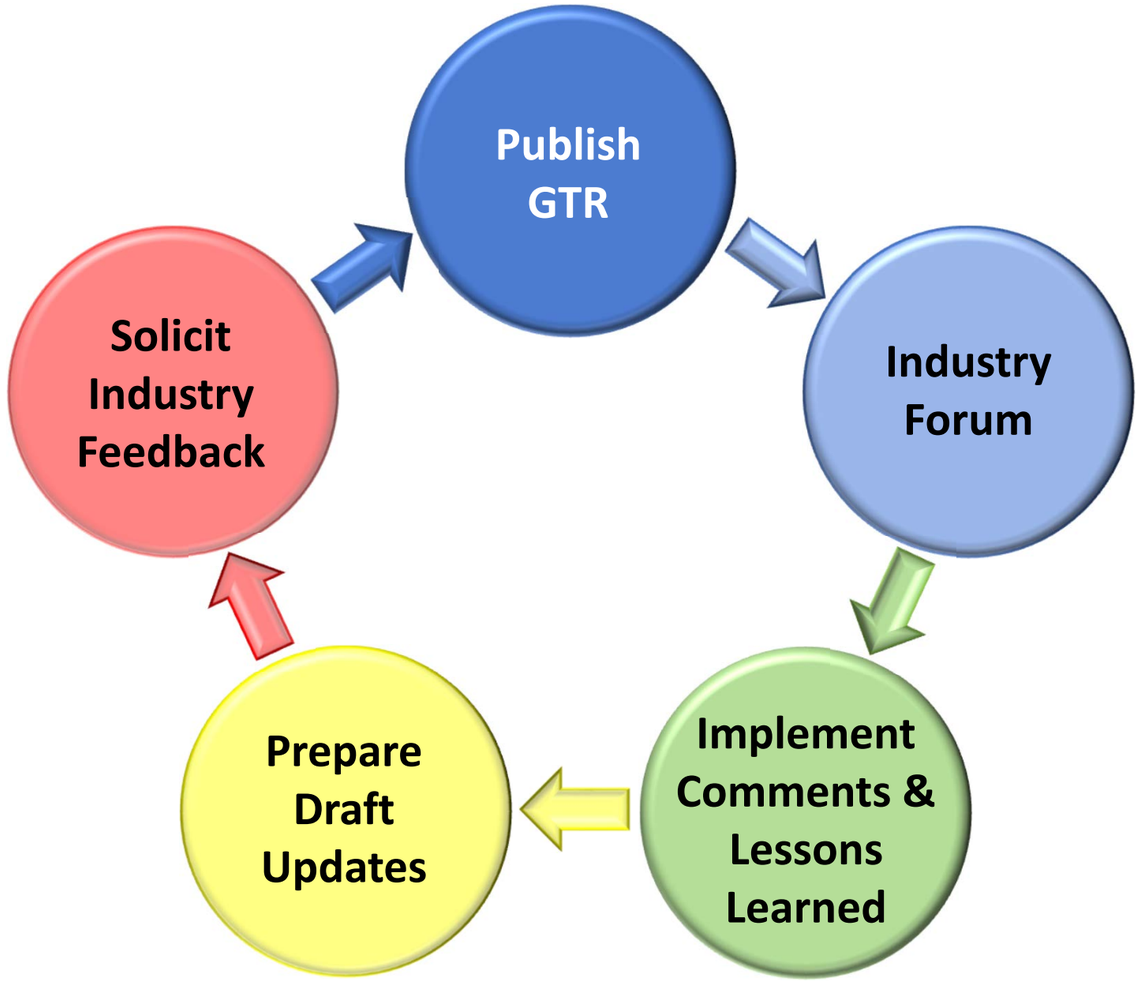
Jason Tosspon
Toll Facilities Eng
P: 407.264.3123
Jason.Tosspon@dot.state.fl.us

Jeff Kipfinger
Electrical Engineer
P: 407.264.3433
Jeff.Kipfinger@dot.state.fl.us

GTR's Purpose and Need

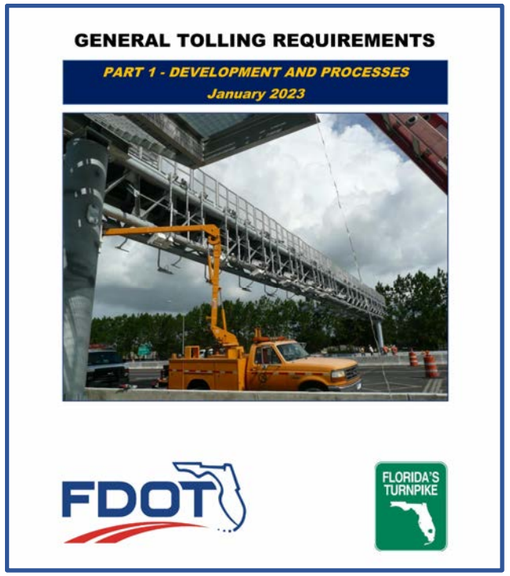
- Statewide source of toll infrastructure criteria and requirements
- Applies to Turnpike and District new tolling projects and when improvements impact existing toll facility operations or infrastructure
- Applies to managed lanes with a tolling component
- Supports all project delivery methods

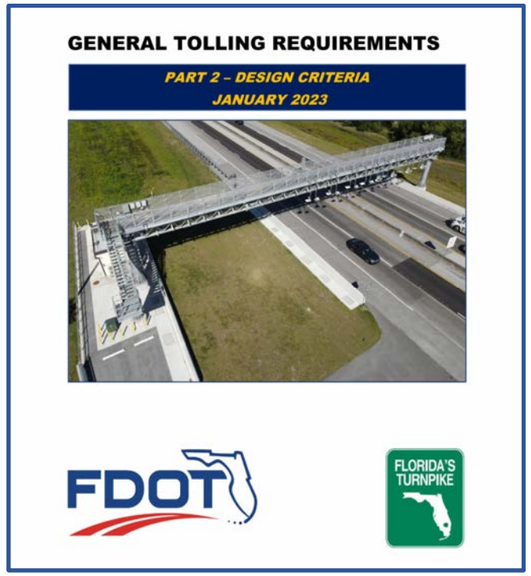
GTR Development Cycle

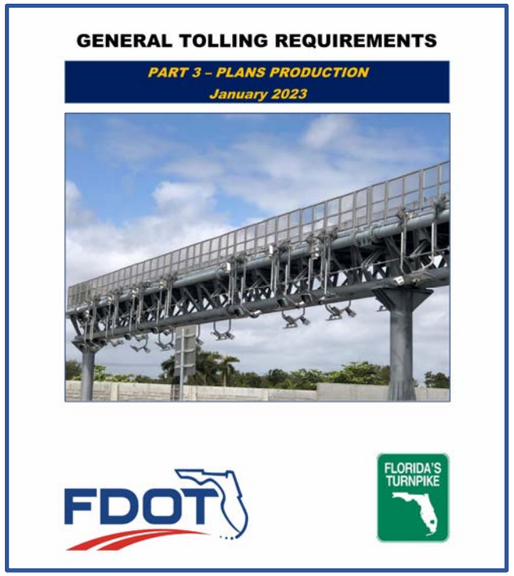


2023 GTR Overview

- Part 1 – Development and Processes
- Part 2 – Design Criteria
- Part 3 – Plans Production







Notable Updates from 2021 GTR

- PART 1
  - Updated abbreviations and terms
  - Clarified Turnpike Tolls Design review and approval processes
- PART 2
  - Clarified PD&E Toll Siting Technical Memorandum (TSTM) requirements
  - Added GTR exhibits
  - Updated GTR sections and exhibits

Notable Updates from 2021 GTR

- PART 2 (cont.)
  - Updated MSPs (GTR 211.2)
  - Appendix 1 – Updated and removed TSP sections
  - Appendix 2 – Signing and Pavement Marking at Toll Sites *(New)*
  - Removed references to Turnpike Design Handbook (TDH)
- PART 3
  - Updated gantry plans submittal requirements
  - Updated pay items

Part 1 – Development and Processes

- Removed references to Turnpike Design Handbook (TDH)
- Revised term Tolled Lanes (TL)
- Clarified GTR Deviation request process
- Updated Tolls Design website

  [Tolls Design – Florida's Turnpike (floridasturnpike.com)]

Tolls Design

Home / Business Opportunities / Design / Tolls Design

STATEWIDE TOLLS DESIGN SUPPORT

- Toll Facilities Scope Section 31T *(posted 04/14/2023)*
- Toll Facilities Staff Hours Form Tab 31T *(posted 04/14/2023)*
- Toll Facilities Engineer's Estimate Template *(posted 04/14/2023)*
- GTR Deviation Submittal Letter Template *(posted 04/14/2023)*
- Toll Siting Technical Memorandum (TSTM) Template *(posted 04/14/2023)*
- Toll Loop Conduit Salvage Detail (PDF) (CAD) *(posted 09/20/2022)*

STATEWIDE TOLLS PROJECT MANAGEMENT SUPPORT

- Project Checklist for Tolls Design Coordination and Support *(posted 08/04/2021)*
- Toll Project Responsibility Matrix *(posted 12/13/2022)*

The District Production Project Manager must communicate with the Turnpike Production Project Manager who will engage with the Toll Systems Project Manager and the Tolls Design Administrator through each phase of the project. Each project should have a complete matrix that is agreed and accepted by both District and Turnpike Project Managers prior to the Phase II plan submittal.

STATEWIDE TOLLS CONSTRUCTION SUPPORT

- Toll Facility Code Compliance and Permit Procedures *(posted 04/14/2023)*

Part 1 – Development and Processes

- Process for use of Roadside Tolling Cabinet (RTC) sites
  - Proof-of-Concept to be field verified
  - Criteria to be refined based on pilot project's lessons learned and maintenance feedback
  - RTC Sites **only** available for selected Turnpike pilot projects or at District's request

120.2 Process for Use of RTC Sites

(1) RTC Sites and associated criteria must not be used without Turnpike Tolls Design and Turnpike Design Engineer approval. See ***GTR 200*** for more information on Toll Site categories.

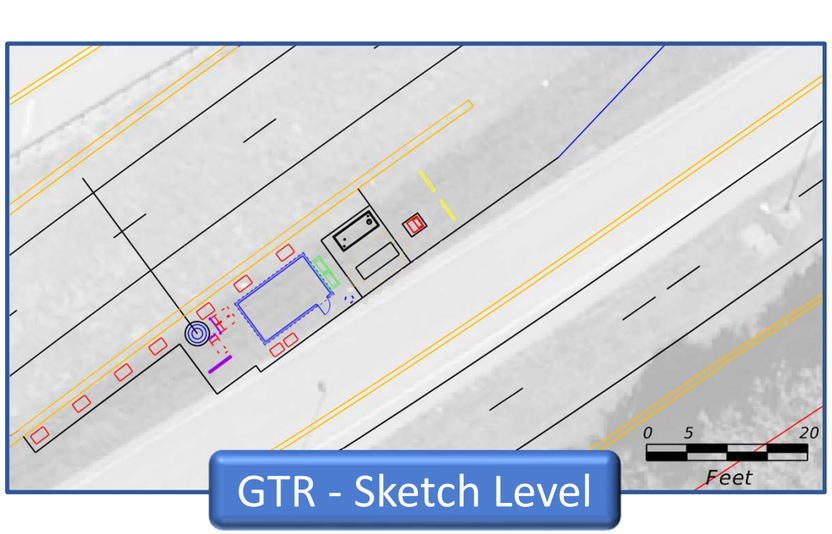
(2) RTC Site use requests must be submitted in PD&E prior to the draft submittal of the preliminary TSTM.

Modification for Non-Conventional Projects:
Delete items (1) and (2) above and replace with the following: RTC Sites and applicable requirements in the GTR must not be used. Use TEB site design criteria for all toll sites.

Part 2 – Design Criteria

202 – Toll Siting

(Not to be confused with PD&E Manual Sketch Level process)



GTR - Sketch Level

202.2 PD&E Toll Siting

During alternatives development, as part of the PD&E, a sketch level toll site must be included in each alternative. Sketch level toll sites must apply the appropriate toll site exhibit onto each concept alternative to confirm the basic geometry. The concept plans must have sufficient detail to show that the proposed location can support a viable toll site. They must also illustrate potential infrastructure conflicts that must be mitigated.

Perform the following for sketch level toll site development:

(1) Assume a separate toll site for each toll gantry during alternatives development.

(2) Use a GTR TEB site as a sketch for alternatives development.

(3) Coordinate with Turnpike Tolls Design where a GTR TEB site layout is not feasible.

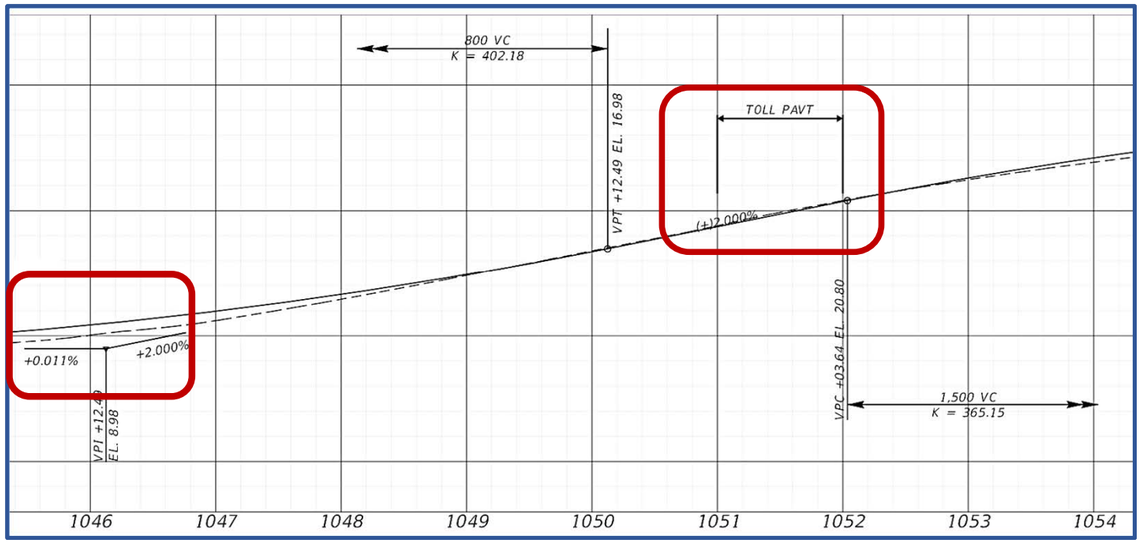
(4) Identify and include justification for any required GTR Deviations.

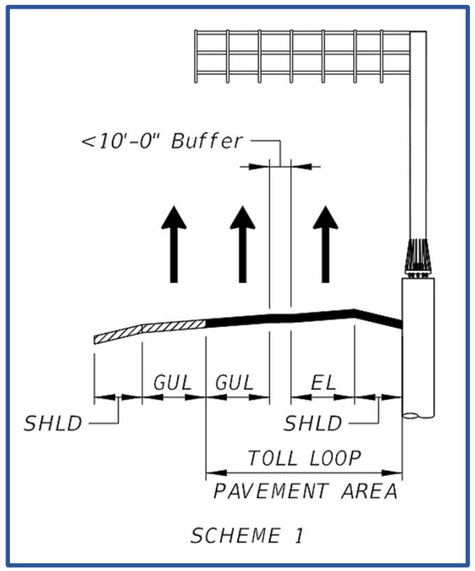
A preliminary TSTM must be prepared for the preferred alternative in accordance with ***GTR 202.3***.

Part 2 – Design Criteria

220 – Toll Site Roadway

- Profiles (sags and crests) (0.3% min.)
- Lane, shoulder, and buffer widths
- Shoulder rocking





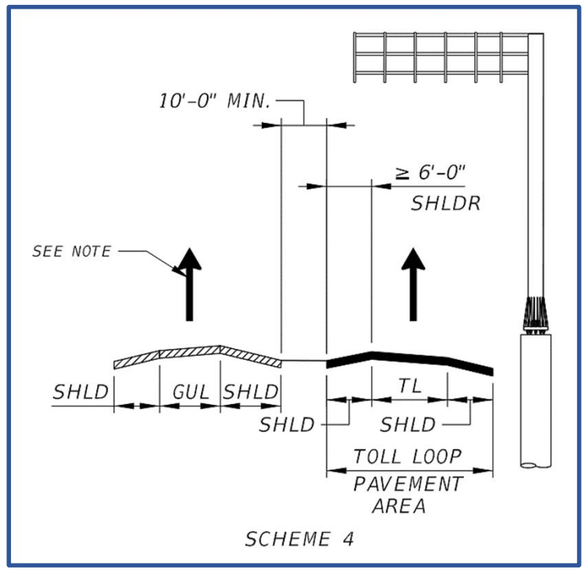


Exhibit 220.2-1 (New)

Part 2 – Design Criteria

222 – Toll Site Signs and Pavement Markings

222.2 Sign TOL-7 "Do Not Stop"

(1) Sign TOL-7 must be located at least 50 feet from the centerline of the gantry. See ***Appendix 2*** for additional information.

(2) Sign TOL-7 location must be coordinated to avoid conflict with pull boxes or other obstructions.

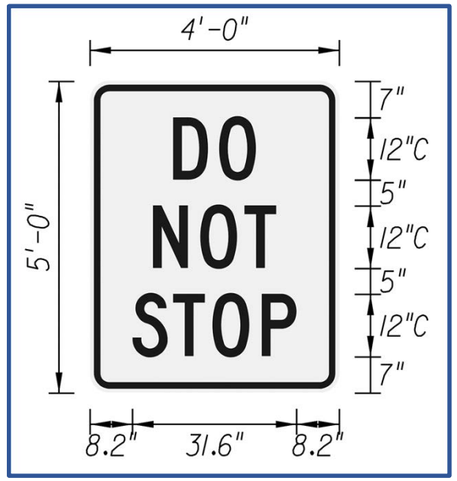
222.3 Sign TOL-8 "Authorized Vehicles Only"

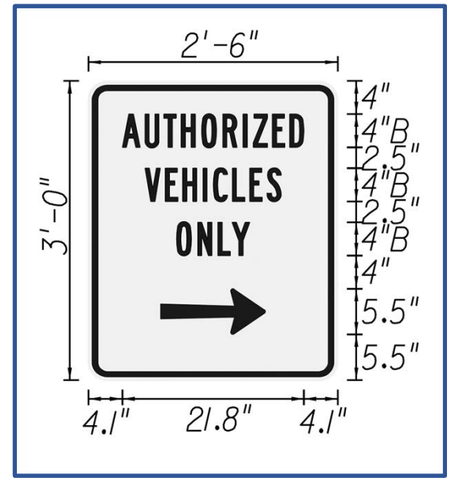
(1) Sign TOL-8 is required at all maintenance pull-off areas.

(2) Sign TOL-8 must be ground-mounted and located within 12-inches from the end of the concrete barrier adjacent to the maintenance pull-off area access point. See the ***TEB Site Plans*** and the ***RTC Site Plans*** in ***GTR 231.***

222.4 Pavement Markings at the Toll Site

See ***Appendix 2*** for pavement marking requirements at the toll site. See the ***Traffic Engineering Manual*** (TEM) for pavement marking and EL marker requirements at express lanes.





Appendix 2 (NEW) Signing and Pavement Marking at Toll Sites

223 – Toll Site Construction Phasing Requirements

223.1 General Requirements

(6) Maintain all existing toll operations with no interruption to toll collection during construction.

(7) Maintain toll operations during construction for express lanes, including dynamic rate setting systems, consistent with the existing tolling plan and operations.

223.3.1 Temporary Traffic Control Plan (TTCP)

(2) The installation of the toll gantry foundations must be identified in the construction phasing as early as possible to allow sufficient time for foundation surveys to be included into the toll gantry shop drawings. Additional subphases may be required to accommodate the construction of the toll gantry foundations prior to the construction of the remainder of the toll site.

(5) Proposed detours that avoid increased tolling through the detour are preferred. Where such increases cannot be avoided, a memorandum with options to address the impact to customers is required. The following scenarios would require an analysis and memorandum to be submitted:

(a) The detour sends users to a toll site with a higher toll or through multiple toll sites.

(b) The detour closes tolled lanes with a cash-only option and sends users to a SunPass only lane.

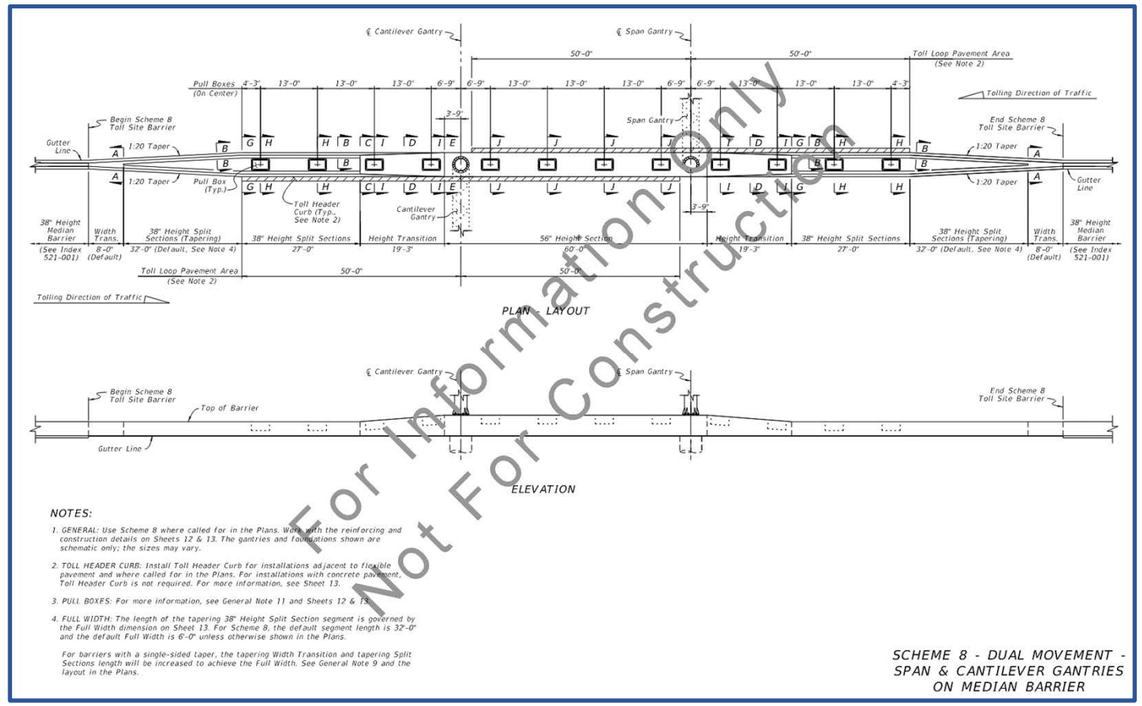
Part 2 – Design Criteria

231 – Toll Site Layout

231.1 General Requirements

(5) Concrete median barrier in accordance with ***Developmental Standard Plans***, ***Concrete Barrier at Toll Sites*** must be installed to accommodate median loop pull box installations and median gantry uprights. Use of Developmental Standard Plans requires approval by the FDOT Central Office.

(Reduces the number of plans and details required)



D521-005 *(3 New schemes)*

Part 2 – Design Criteria

232 – Toll Site Electrical *(Reorganized and added Exhibits)*

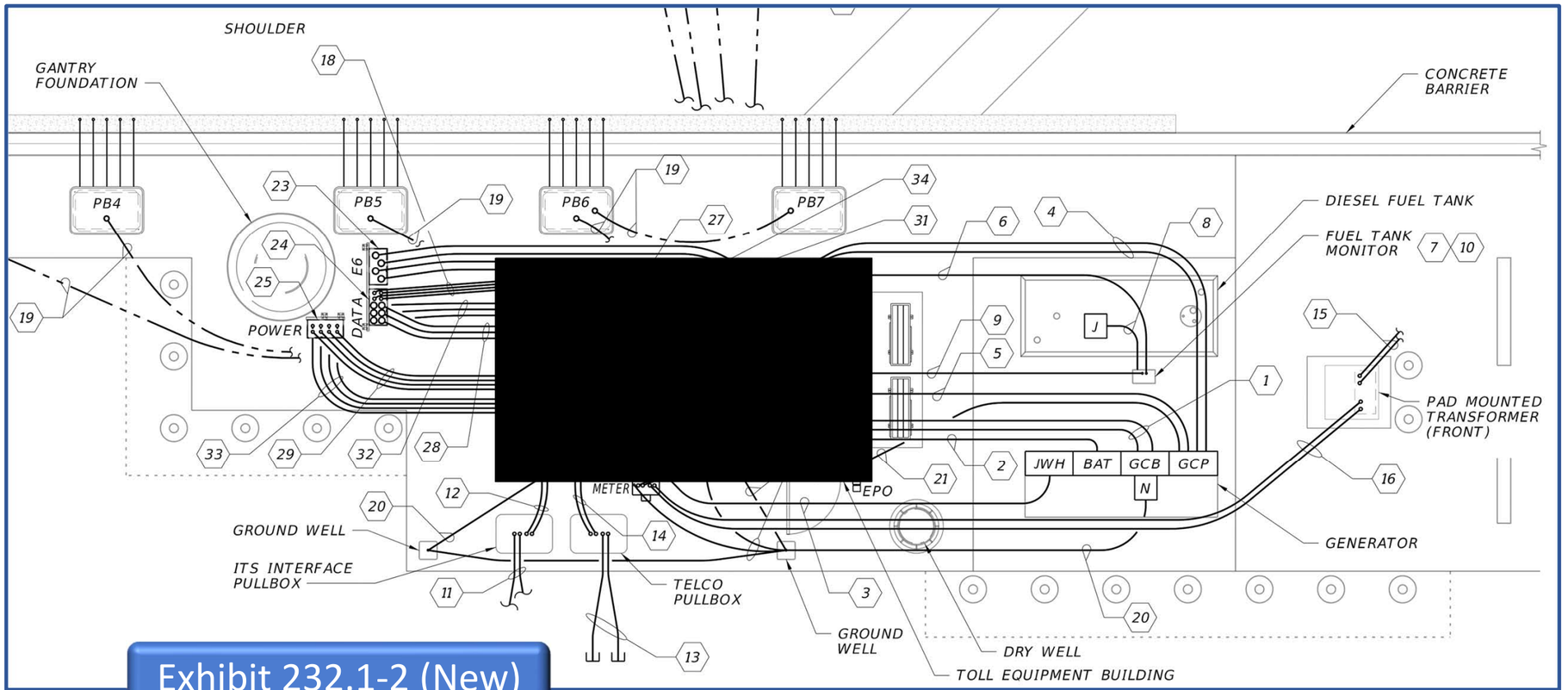


Exhibit 232.1-2 (New)

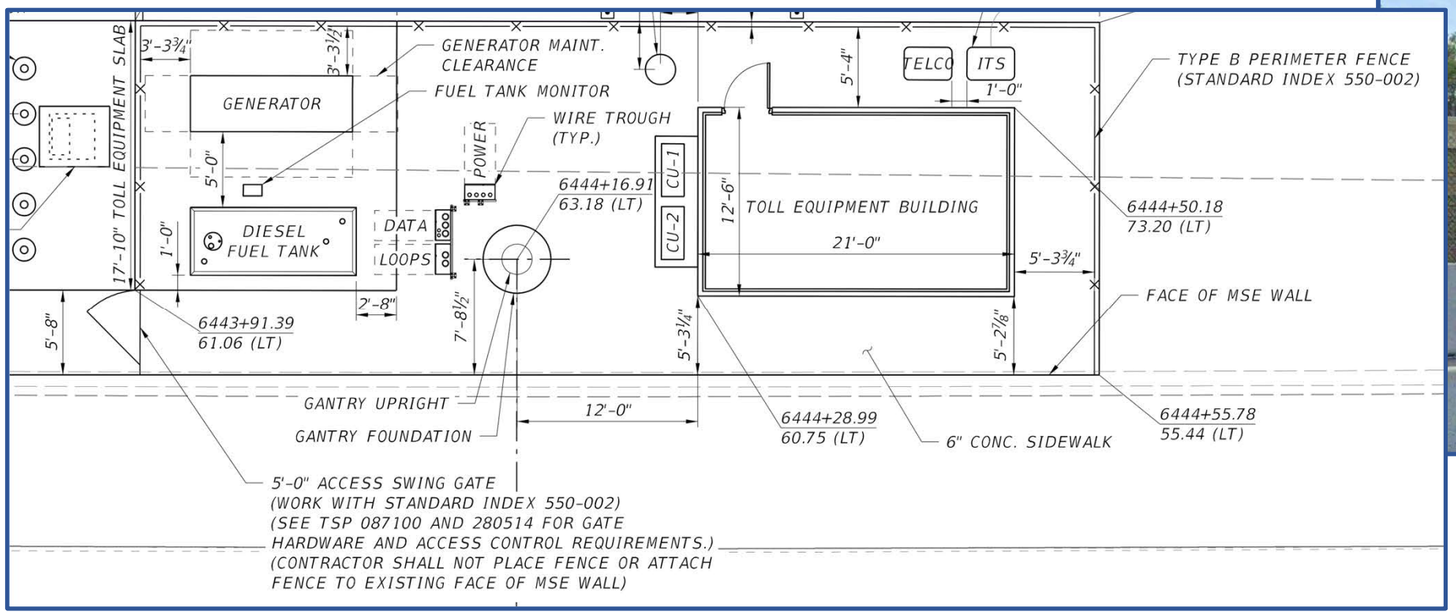
REFERENCE NOTES:

1. EOR TO PROVIDE CONDUIT SIZES, WI FOR CONNECTION FROM GENERATOR C
2. 1" CONDUIT FROM BATTERY CHARGING (RED FOR +12V, BLACK FOR -12V).
3. 1" CONDUIT FOR JACKET WATER HEAT
4. (2) 1"C. FROM GENERATOR CONTROL PA
5. 1"C. FOR (2) #14 (GENSET RUN), (4) #1
6. 3/4"C. FOR SCADA CONNECTIONS TO F
7. PULLBOX MOUNTED ON STRUT CHANNE
8. (1) 1"C. FOR FUEL TANK AND FUEL TAN
9. (1) 1"C. FUEL TANK MONITOR (EDP-XX).
10. MOUNT TOP OF FUEL TANK MONITOR STRUT CHANNEL SUPPORT POSTS, (1-5, ENCASE THE SUPPORT POSTS AT 3'-0" CONCRETE ENCASE EACH POST WITH
11. CONDUITS FROM ITS SPLICE VAULT, P COORDINATE WITH ITS CONTRACTOR FIBER OPTIC CABLE MARKER INSTALLA
12. (2) 2"C. STUBBED UP BELOW THE WAL CABINET FROM THE ITS INTERFACE PU FOC INSTALLED BY ITS CONTRACTOR.
13. (2) 2"C. FROM TELCO PULLBOX TO FIV SIDEWALK FOR FUTURE "LEASED LINE"
14. (2) 2"C. FROM TELCO PULLBOX TO ARE
15. UTILITY COMPANY PRIMARY FEEDER. PROVIDER FOR ROUTING FROM POINT MOUNTED TRANSFORMER. SEE SHEET
16. SERVICE LATERAL TO MDP VIA METER.
17. TOLL EQUIPMENT MOUNTING FRAME.
18. (2) 2"C. (CCTV), (2) PER DIRECTION O
19. (1) 3"C. FOR LOOP WIRING.
20. GROUNDING ELECTRODE SYSTEM.
21. (1) 1"C. FROM EMERGENCY POWER OFF
22. (X) 1"C. FOR LOOP WIRING.

Part 2 – Design Criteria

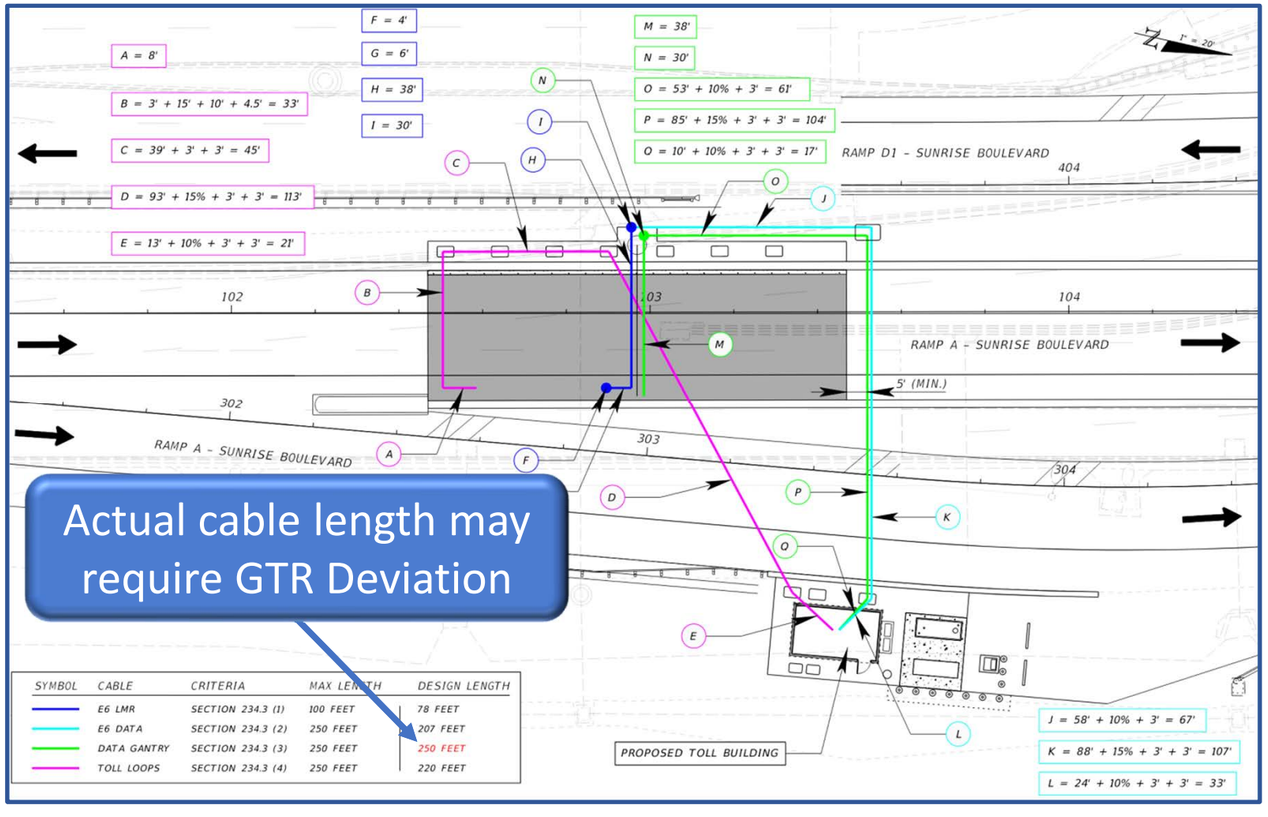
232.9 Toll Site Security

(Clarified site access control for locations where fences and gates are required)



Part 2 – Design Criteria

234.3 – Cable Distance Templates

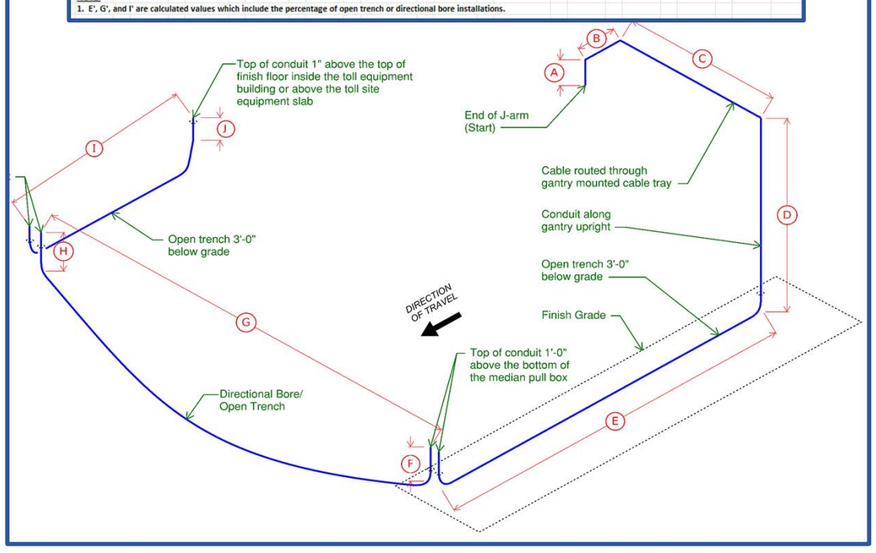


GTR Section 234.3(3)

Option 1: Top of median pull boxes are HIGHER than toll equipment building finish floor elevation.

A	+	B	+	C	+	D	+	E'	+ (2) x	F	+	G'	+ (2) x	H	+	I'	+	J	= TOTAL CABLE DISTANCE
4		6		0		30		62		10		0		6		42.9		0	160.9 FEET
				Measured distance from center of furthest equiped lane to center of gantry upright.		Measured distance from gantry mounted cable tray to 3 feet below grade.		Add 10% for Open Trench		Depth of conduit burial to 1-foot above the bottom of the loop pull box.		Add 15% for Directional Bore		Depth of conduit burial to 1-foot above the bottom of the loop pull box.		Add 10% for Open Trench			Cable Distance is Acceptable
								E		F		G		H		I			
								56		5		0		3		39			

NOTE:
1. E', G', and I' are calculated values which include the percentage of open trench or directional bore installations.



Part 2 – Design Criteria

241.6-1 TEB Foundation

(Standard floor penetration layout)

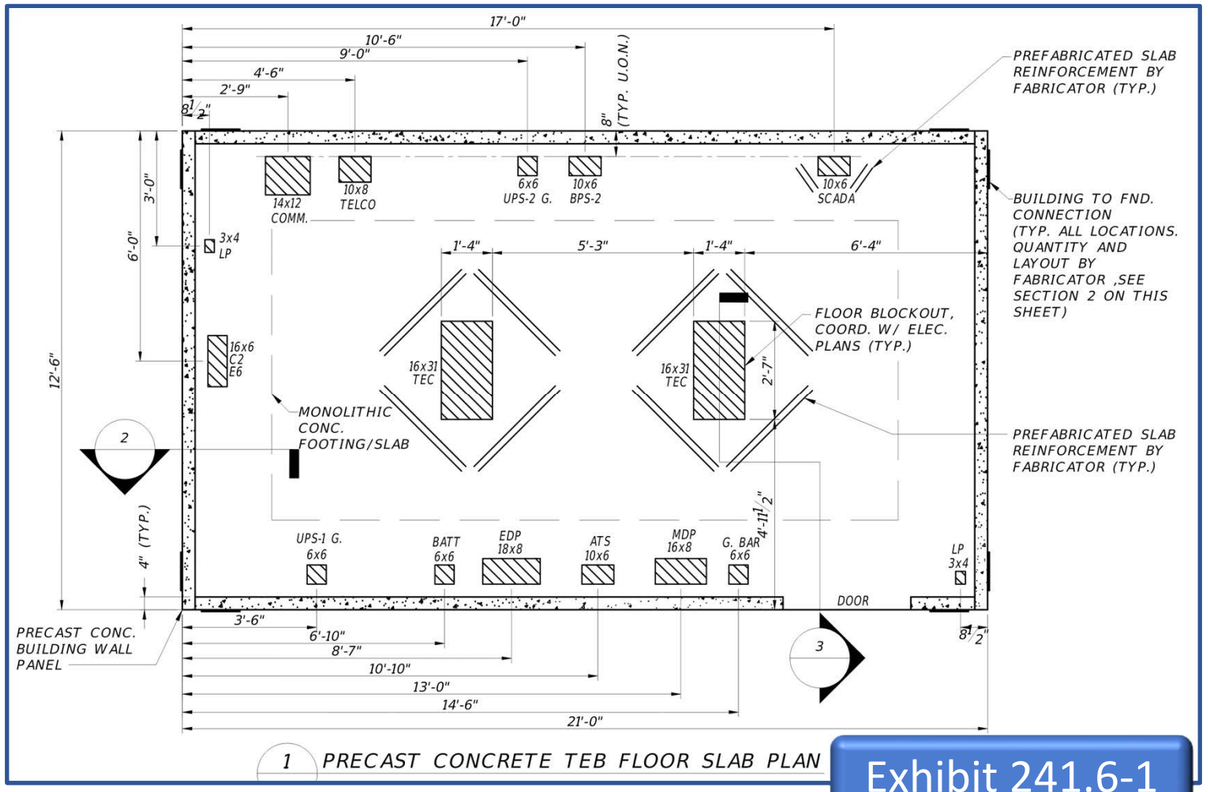


Exhibit 241.6-1

Part 2 – Design Criteria

242.1-2 TEB Electrical Layout *(Updated)*

[redacted]

Exhibit 242.1-2

[redacted]

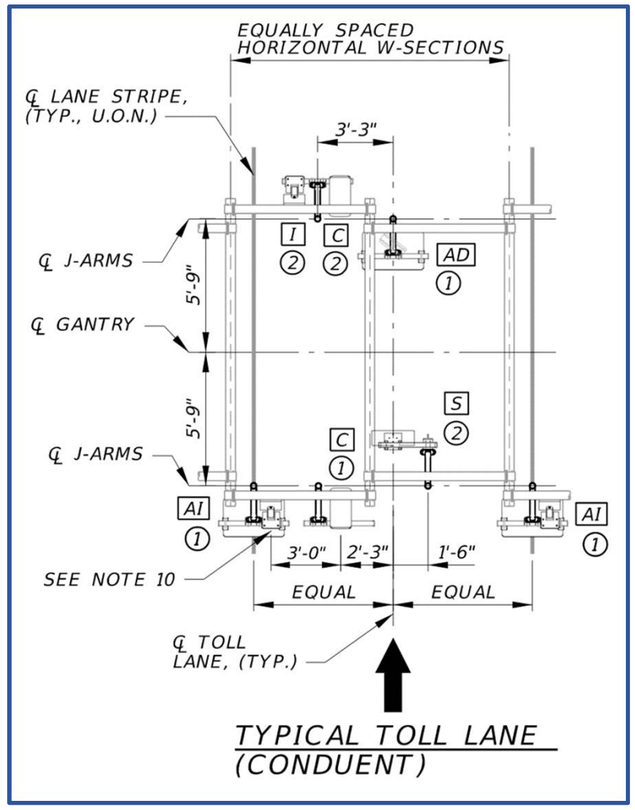
Exhibit 242.1-4

Part 2 – Design Criteria

250 – Toll Gantries *(Updated vendor req's.)*

Exhibits separated by vendor

- Exhibit 250.2-1 TransCore Layout
- Exhibit 250.2-2 Conduent Layout
- New Vendor equipment loading added
- Exhibit 250.2-3 Toll Equipment Loads



Part 2 – Design Criteria

251 – Toll Gantry Structural

EORs are only responsible for strength and fatigue design compliance for cantilever gantries

(Removed the need for comparative analysis to the original sample calculations)

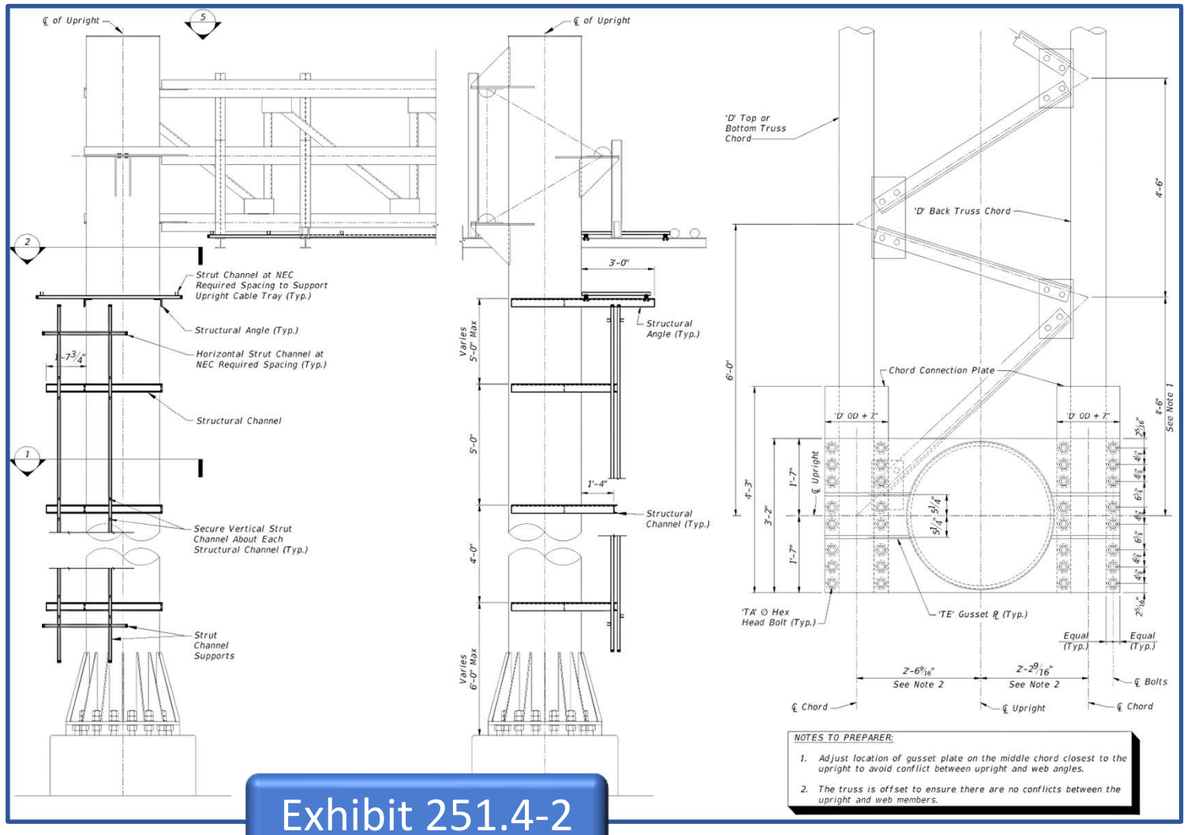


Exhibit 251.4-2

Part 2 – Design Criteria

251 – Toll Gantry Structural

- Minor Update: Exhibits 251.7-1, 251.7-4, 251.7-5, 251.7-6, 251.7-8 thru 251.7-16, 251.7-18 thru 251.7-20
- Replaced: Exhibit 251.7-7

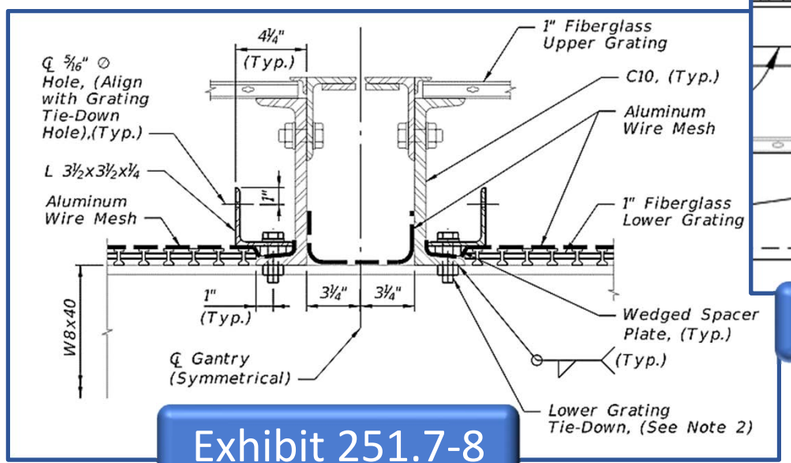


Exhibit 251.7-8

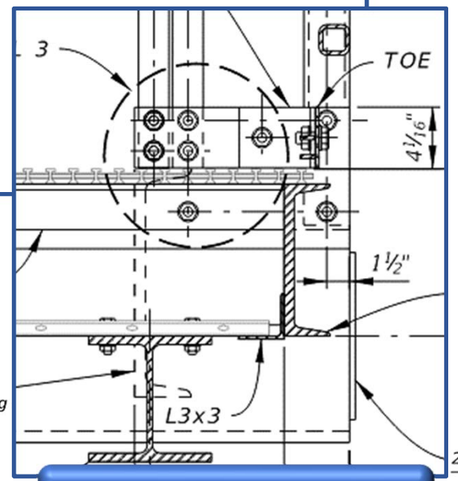


Exhibit 251.7-18

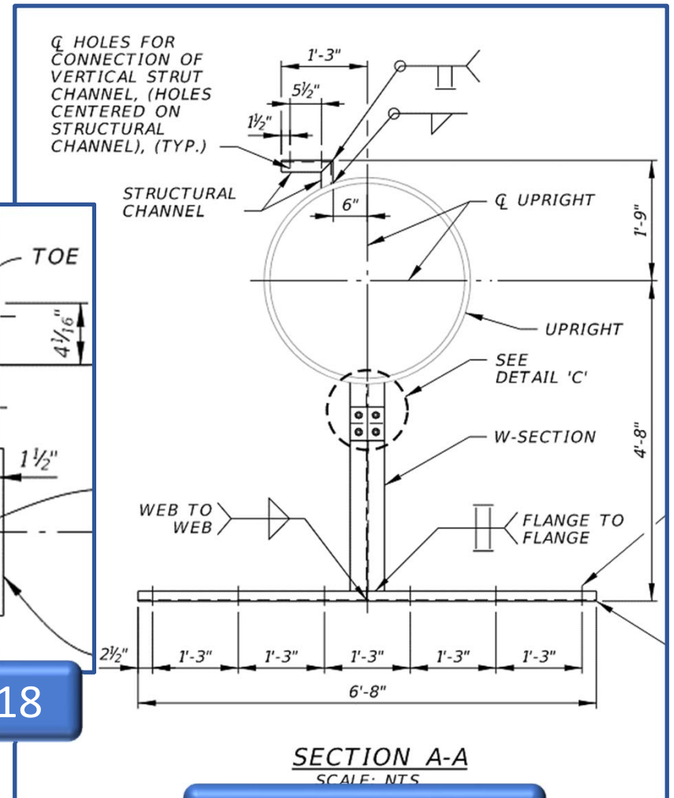


Exhibit 251.7-7

Part 2 – Design Criteria

252 – Toll Equipment J-Arms

- Added TEC equipment adjustability
- Lengthened u-bolts

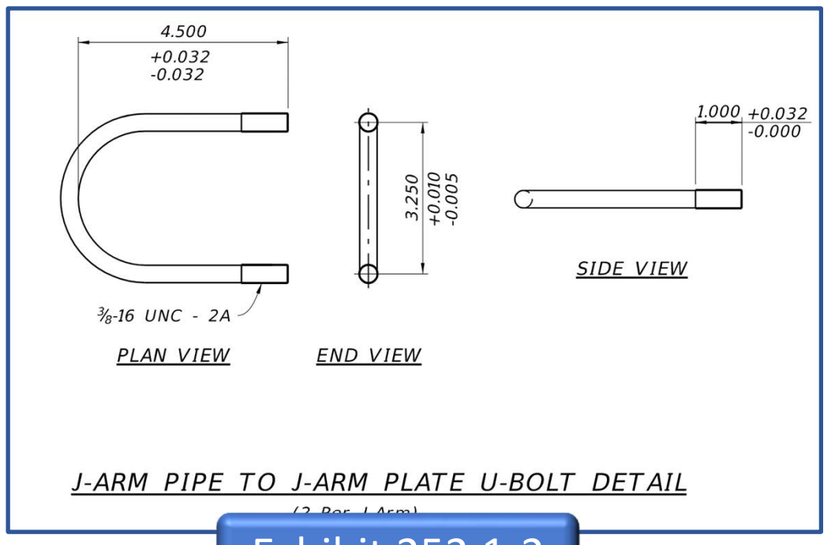
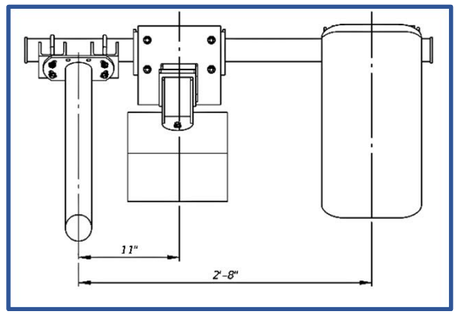


Exhibit 252.1-2



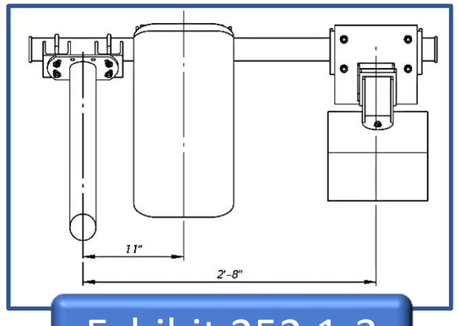


Exhibit 252.1-3

Part 2 – Design Criteria

254 – Equipment Retraction Assembly for Accessible Gantries

- Added latch plate u-bolt detail
- Added notes to preparer
- Updated u-bolt details

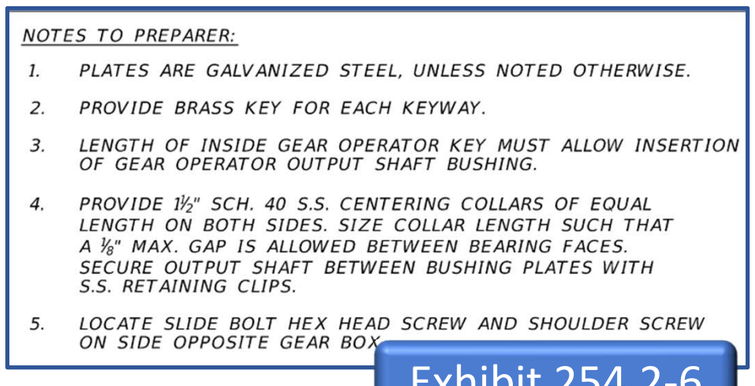


Exhibit 254.2-6

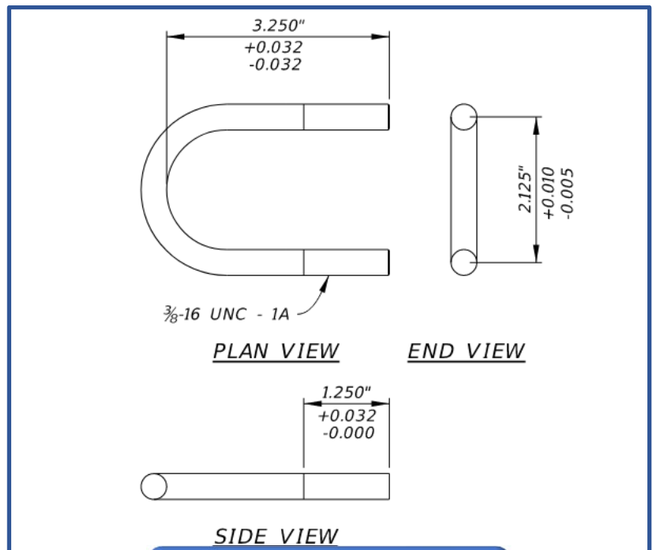


Exhibit 254.2-5

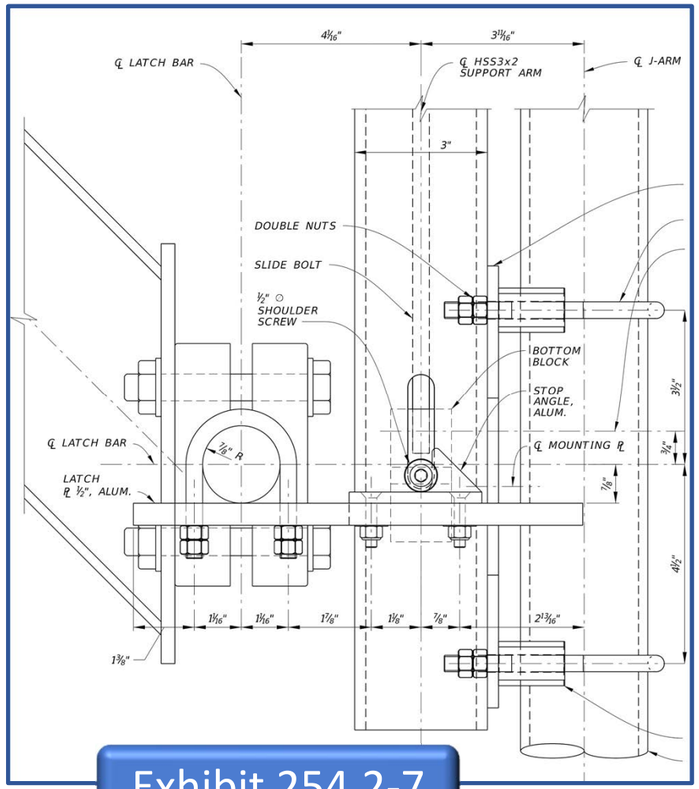


Exhibit 254.2-7

Part 2 – Design Criteria

255 – Gantry Electrical

(Clarification for gantry upright size)

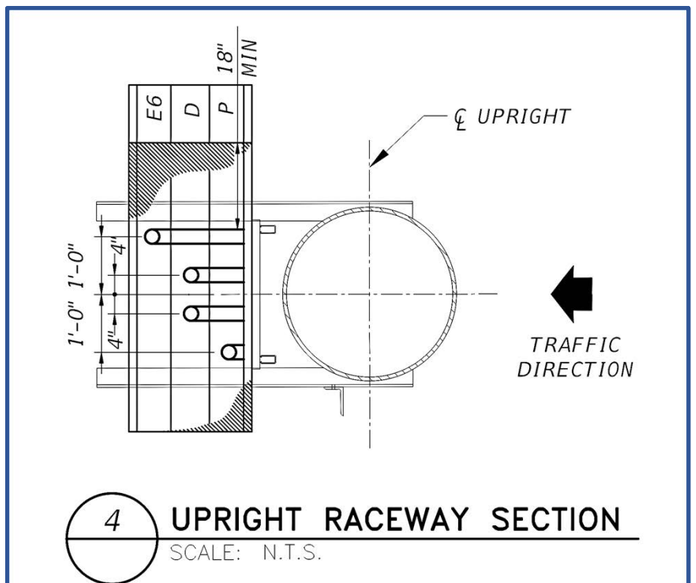


Exhibit 255.5-3

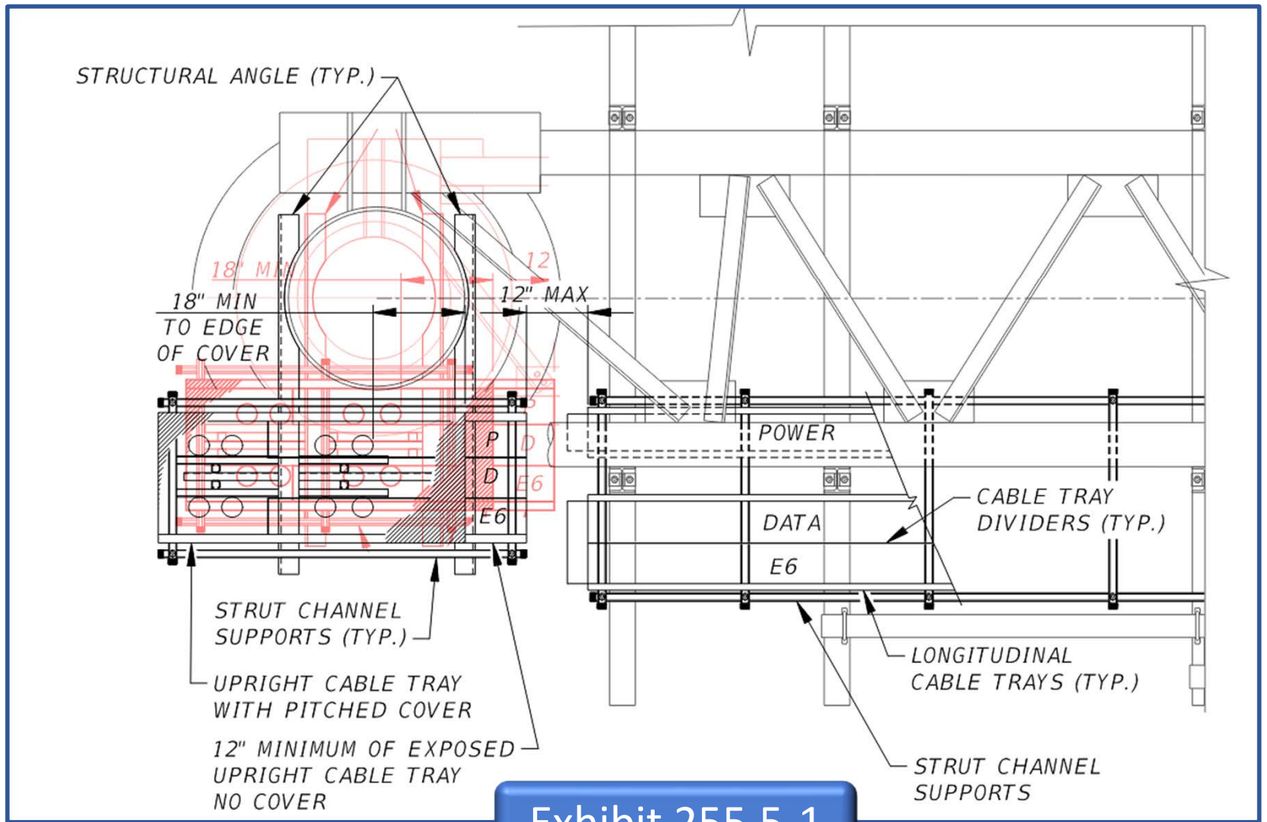


Exhibit 255.5-1

255 – Gantry Electrical

(Added unistrut for TEC neutrality)

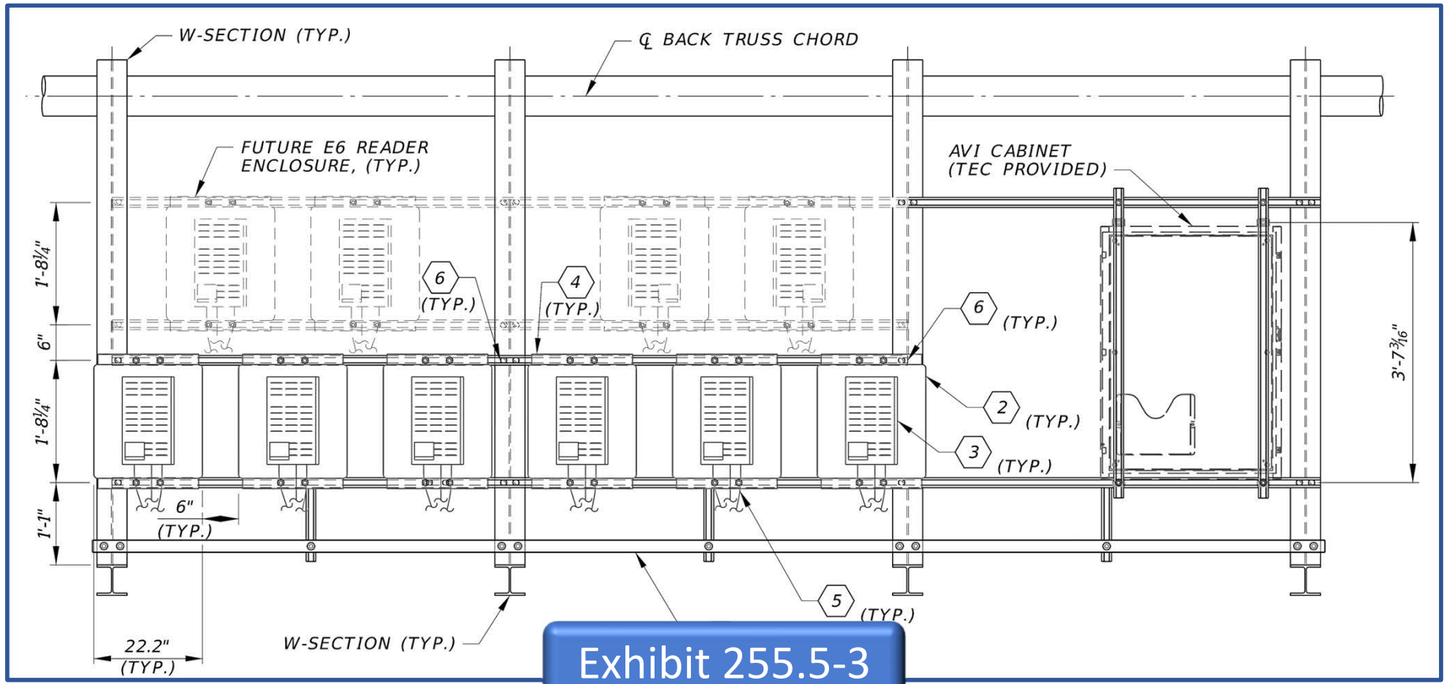


Exhibit 255.5-3

Part 2 – Design Criteria

255 – Gantry Electrical

(Standardized wire trough layout)

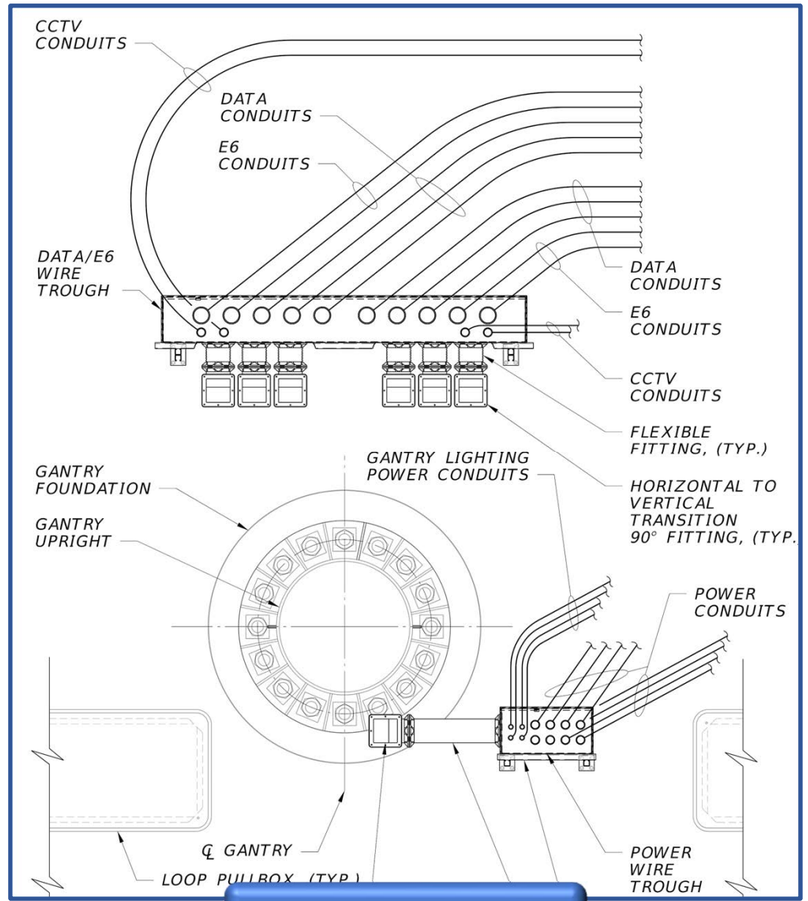
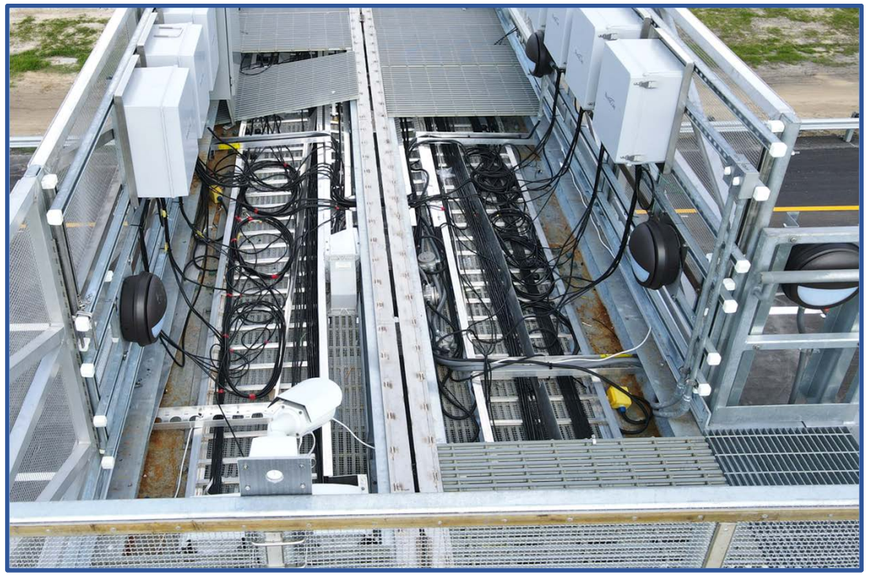


Exhibit 255.6-5

Part 2 – Design Criteria

255 – Gantry Electrical

(Provided dedicated power routing from stair to vertical wireway)



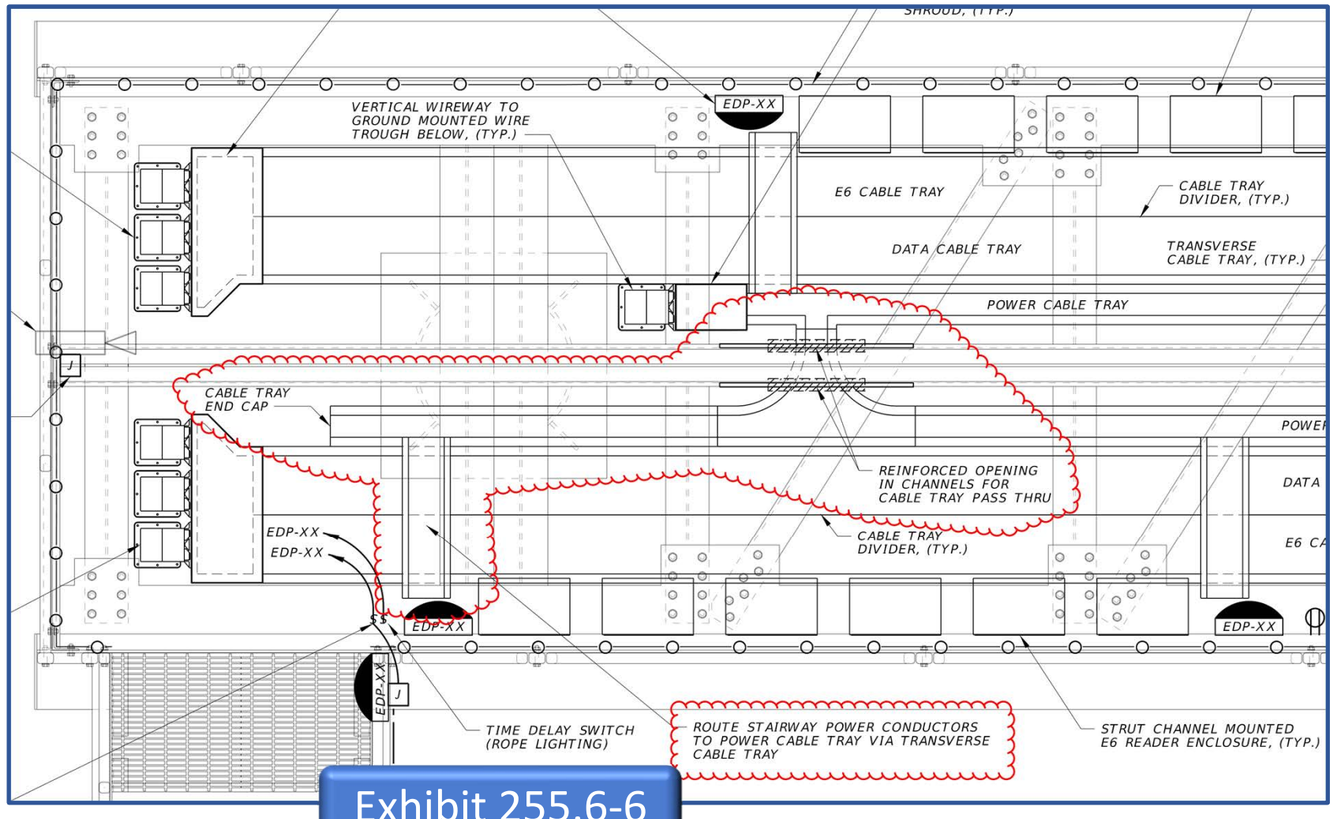


Exhibit 255.6-6

Part 2 – Design Criteria

270 – Building Permits

(8) Coordinate with the Building Permit Coordinator for the electronic delivery of permitting documentation that is required. E-Submittals files must be under 24mb.

The electronic delivery should conform to the following file naming conventions:

(a) Toll Facility Plans.....FPID_TS#_Plan.pdf

(b) Technical Special Provisions .....FPID_TSP.pdf

(c) Toll Facility Cost Estimates.....FPID_TS#_Cost Estimate.pdf

(9) For each building site, the Building Permit Coordinator has thirty working days from receipt to review and accept the provided building permitting documents. Upon acceptance, the Building Permit Coordinator will forward the documents to BCA and State Fire Marshal for approval. Working day periods do not include weekends, holidays, special events, and work period shut downs prescribed by all applicable contract documents.

(10) The Building Permit Coordinator's review of the plans prior to letting is for conformance to the documentation requirements. It is the sole responsibility of the AOR/EOR to ensure the permitting documents for BCA and State Fire Marshal approval are complete and correct.

Tolls Design

Home / Business Opportunities / Design / Tolls Design

STATEWIDE TOLLS DESIGN SUPPORT

- Toll Facilities Scope Section 31T *(posted 04/14/2023)*
- Toll Facilities Staff Hours Form Tab 31T *(posted 04/14/2023)*
- Toll Facilities Engineer's Estimate Template *(posted 04/14/2023)*
- GTR Deviation Submittal Letter Template *(posted 04/14/2023)*
- Toll Siting Technical Memorandum (TSTM) Template *(posted 04/14/2023)*
- Toll Loop Conduit Salvage Detail (PDF) (CAD) *(posted 09/20/2022)*

STATEWIDE TOLLS PROJECT MANAGEMENT SUPPORT

- Project Checklist for Tolls Design Coordination and Support *(posted 08/04/2021)*
- Toll Project Responsibility Matrix *(posted 12/13/2022)*

The District Production Project Manager must communicate with the Turnpike Production Project Manager who will engage with the Toll Systems Project Manager and the Tolls Design Administrator through each phase of the project. Each project should have a complete matrix that is agreed and accepted by both District and Turnpike Project Managers prior to the Phase II plan submittal.

STATEWIDE TOLLS CONSTRUCTION SUPPORT

- Toll Facility Code Compliance and Permit Procedures *(posted 04/14/2023)*

Part 2 – Design Criteria

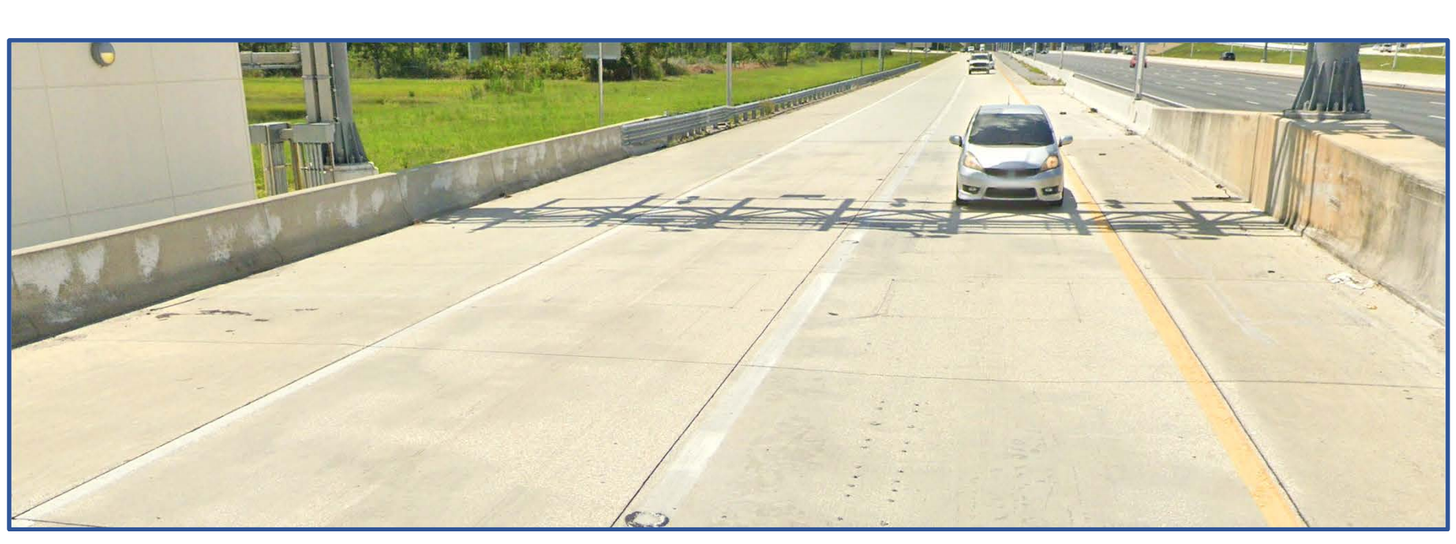
Appendix 1 - Updated TSP Sections

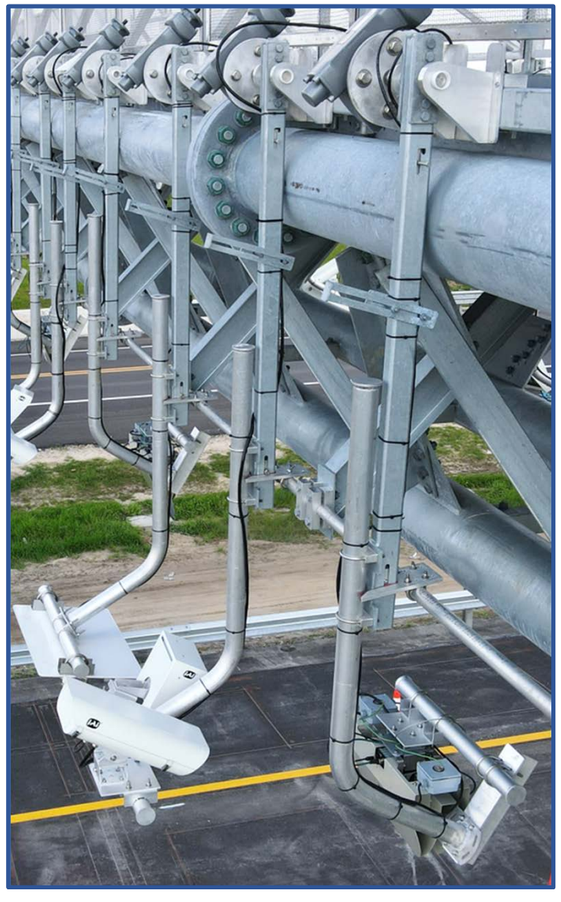
- 01 11 00 – Summary of Work
- 01 41 26 – Building Permits
- 05 50 00 – Metal Fabrications
- 09 91 00 – Painting
- 23 05 00 – General Mechanical Requirements
- 26 05 01 – Shop Drawings and Submittals
- 26 05 33 – Raceway and Boxes for Electrical Systems
- 26 09 13 – Supervisory Control and Data Acquisition System
- 26 32 13 – Engine Generator
- 26 36 00 – Automatic Transfer Switch
- 27 11 16 – Tolling Communications Cabinet
- 28 05 14 – Access Control System

Part 2 – Design Criteria

Appendix 1 - Removed TSP Sections

- 03 30 00 – Cast-in-Place Concrete *(incl. in spec. T400)*
- 05 06 50 – Gantry Hardware *(incl. w/ Pay item 735-1-XXX)*
- 32 13 14 – Fiber Reinforced Concrete Pavement *(under review)*

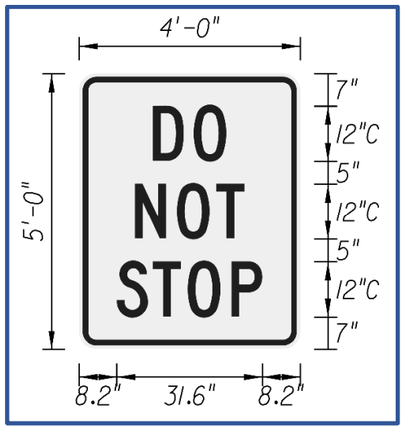


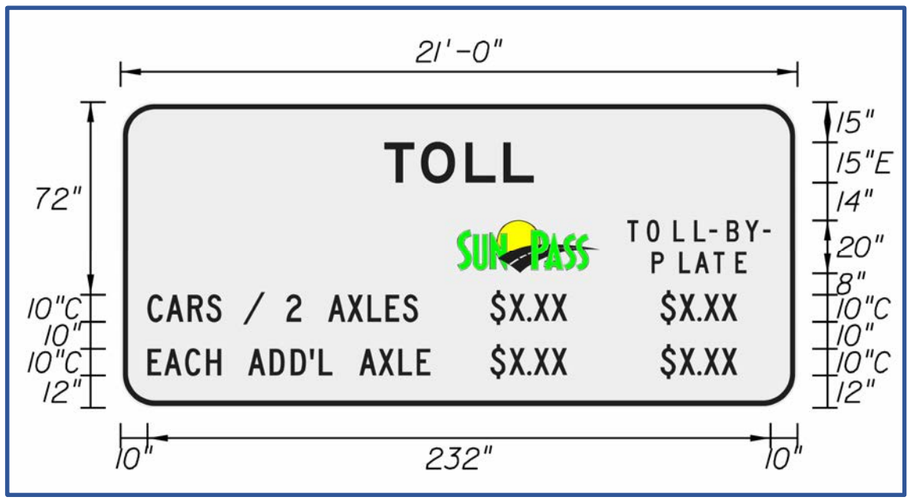


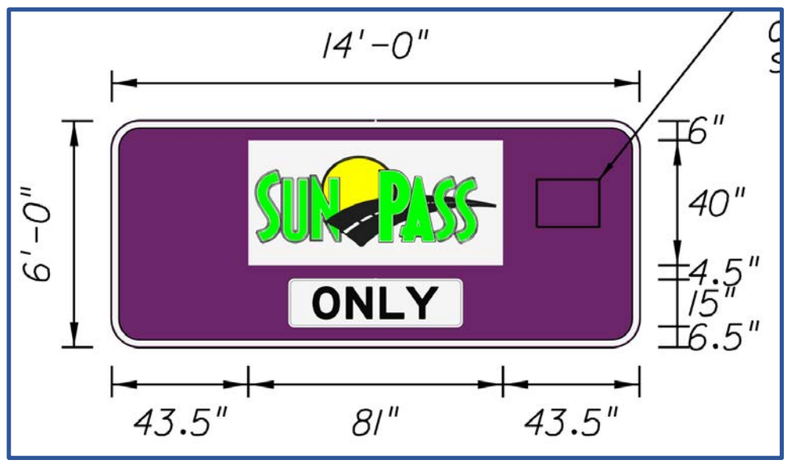
Part 2 – Design Criteria

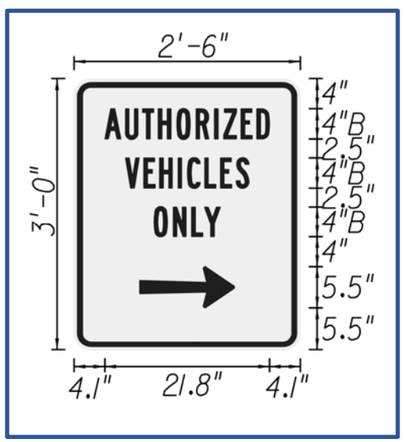
Appendix 2 – Signing and Pavement Marking at Toll Sites

(New from TDH; Applies to new and existing toll facilities)





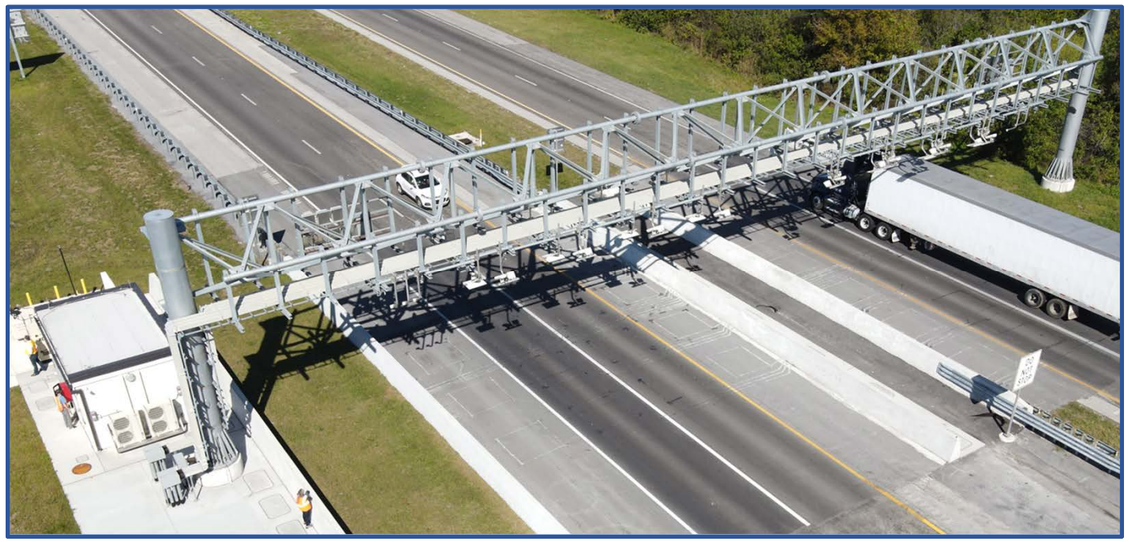




Part 3 – Plans Production

302 – Sub-Components of Toll Facility Plans

(Gantry plans are prepared by each gantry type sub-component)



Part 3 – Plans Production

306 – Pay Items

- Clarified pay items to match engineer's estimate
- 306.1 – TEB Sites
  - Pay Items revised: Lump sum for New TEB, Modify TEB and Toll Site Demolition
  - Separate pay item for each gantry *(includes gantry electrical)*
  - Separate pay items for bollards, sidewalk, etc.

(b)	Toll Gantry, Non-accessible
(c)	Toll Gantry, Accessible
(d)	Electrical Power Service, Toll Site Electrical Metering and Utility Service Entrance
(e)	Emergency Generator, Permanent – including fuel tank and equipment slab
(f)	Toll Site Pull Boxes (12"x12", 24"x36", 30"x48")
(g)	Conduit (Open Trench / Directional Bore) excluding conduits associated with the TEB as defined in item (1)(a) above and the gantry as defined in item (2) below.
(h)	Performance Turf (Sodding at each toll site)
(i)	Fence Gate
(j)	Toll Site Perimeter Fencing
(k)	Concrete Bumper Guard for Parking Lot
(l)	Guardrail Transition Connection to Rigid Barrier
(m)	Guardrail
(n)	Concrete Sidewalk, 6" thick
(o)	Shoulder Concrete Barrier
(p)	Median Concrete Barrier
(q)	Curb and Gutter (Toll Header Curb)
(r)	Bollards (Permanent / Removable)
(s)	Bullet Rail, Single Rail
(t)	Pedestrian/Bicycle Railing
(u)	Pipe Handrail, Guiderail
(v)	Toll Plaza (Modify Existing) - Modifying existing or phased demolition
(w)	Toll Plaza Island - toll plaza island / lane work
(x)	Concrete Class II, Bulkhead
(y)	Flowable Fill
(z)	Delivery of Salvageable Material
(aa)	Removal of Concrete Pavement, Sidewalks, Slabs, etc.
(bb)	Clearing and Grubbing - total site demolition

2023 GTR – Industry Comments

- ACEC / FTBA
  - 23 comments provided
  - Implemented 17 of 23 comments
  - Received concurrence from reviewers of non-implemented comments

(Copy of comments and responses available upon request)

Questions? Comments…

James E. Beverly, CPM
Tolls Design Administrator
JamesE.Beverly@dot.state.fl.us
407.264.3646 Office